

# EUROPEAN PATENT OFFICE

## Patent Abstracts of Japan

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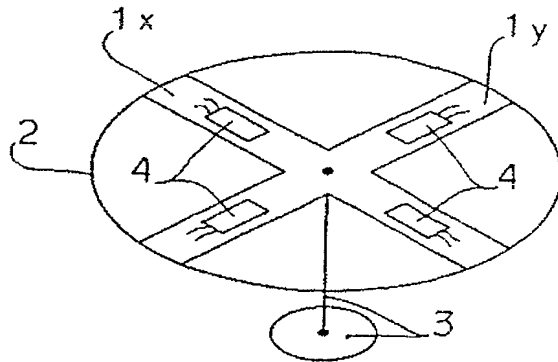
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TITLE : ATTITUDE SENSOR



ABSTRACT : PURPOSE: To operate and display an angle of inclination output and an inclination azimuth output in electrical signal, by a method wherein cross-array external ends of strain gauge plates are connected together to make a weight to detect a distortion level from a weighting value of the weight and the direction of weighting.

CONSTITUTION: External ends of strain gauge plates 1x and 1y arranged in a cross are connected together to make a weight 2, the strain gauge plates 1x and 1y are supported with a base 3 at the center thereof and distortion detecting elements 4 are attached thereto. When the strain gauge plates 1x and 1y arranged in a cross are set as X-axis and Y-axis respectively, an angle  $\theta_K$  of inclination is determined by  $(X^2+Y^2)^{1/2}$ . If an attitude sensor tilts in a certain direction, a distortion is generated in the strain gauge plates arranged in a cross because of the nature of always keeping a balance which has the weight as made by connecting the cross-array external ends of the strain gauge plates. Thus, a strain gauge, a soft piezo-electric film or the like is attached as distortion detecting element 4 to detect distortions of the strain gauge plates thereby permitting simultaneous detection of the angle and the direction of inclination.

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